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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,902	07/10/2003	Daniel Iancu	29083/40763	9548

23646 7590 06/27/2006

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EXAMINER	
MALEK, LEILA	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/615,902	IANCU ET AL.	
	Examiner	Art Unit	
	Leila Malek	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☒ Claim(s) *10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/01/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement submitted on 12/01/2004 has been considered and made of record by the examiner.

Claim Objections

2. Claims 1, 7, and 10 are objected to because of the following informalities:

a. As to claim 1, applicant fails to define acronyms A/D and D/A.
b. As to claim 7, applicant fails to define acronyms GPS, WLAN, GSM, GPRS, WCDMA.
c. As to claim 10, applicant fails to define parameter n.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (background of invention) in view of Culpepper et al. (hereafter, referred as Culpepper) (US 5,657,026).

As to claim 1, applicant's admitted prior art shows (see Fig. 1) a radio 10 comprising: a first channel for receiving signals at a first carrier frequency (see the channel regarding to the GPS device); a second channel for receiving and transmitting signals at a second carrier frequency (see the channel regarding to the WLAN device);

a multiplexer 52 connected to the first and second channels; an A/D converter 54 and a D/A converter 56 connecting the channels through the multiplexer 52 to a digital signal processor 50; an oscillator 62 connected (through the frequency synthesizer) to the A/D and D/A converters; and the digital signal processor controlling the multiplexer (see control 51) and modifying received and transmitted digital signals to accommodate for the different carrier frequencies. Applicant's admitted prior art discloses all the subject matters claimed in claim 1, except that the oscillator is providing common sampling rate to the A/D and D/A converters. Culpepper in the same filed of endeavor, discloses an apparatus (see Fig. 4) comprising; a first channel for receiving signals (see 29A, and column 4, lines 28-33); a second channel for receiving signals; a multiplexer 30 connected to the first and second channels; an A/D converter 50 and a D/A converter (71 A, 71 B or 71 C) connecting the channels through the multiplexer 30 to a digital signal processor 80; and an oscillator (41 or 45) connected to and providing a common sampling rate to the A/D and D/A converters (column 6, lines 2-4). It would have been obvious to one of ordinary skill in the art at the time of invention to modify applicant's background of invention as suggested by Culpepper to use the same sampling rate for the A/D and D/A converters and therefore by providing just one sampling rate make the frequency synthesizer circuitry more simple.

As to claim 2, applicant's background of invention shows (see Fig. 1) that the radio apparatus further includes a frequency synthesizer 60 connected to the oscillator 62 and providing different frequency signals (A and B) to the first and second channels.

As to claim 3, applicant's background of invention shows (see Fig. 1) that the radio apparatus further includes a third channel (see the channel regarding to the Blue Tooth device) for receiving and transmitting signals at a third carrier frequency and connected to the multiplexer 52.

As to claim 4, applicant's background of invention shows (see Fig. 1) that the radio apparatus further includes a frequency synthesizer 60 connected to the oscillator 62 and providing different frequency signals to the first, second and third channels (see A, B, and C).

As to claim 7, applicant's background of invention shows (see Fig. 1) that in the radio apparatus 10, the first channel is designed to receive GPS signals, and the second channel is designed to receive signals from the group of WLAN, Blue Tooth, GSM, GPRS and WCDMA.

4. Claims 1, 3, 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Culpepper et al. (hereafter, referred as Culpepper) (US 5,657,026), in view of Siegel et al. (hereafter, referred as Siegel) (US 2004/0198381).

As to claim 1, Culpepper discloses an apparatus (see Fig. 4) comprising; a first channel for receiving signals at a first carrier frequency (see 29A, and column 4, lines 28-33); a second channel for receiving signals at a second carrier frequency (see 29 b); a multiplexer 30 connected to the first and second channels; an A/D converter 50 and a D/A converter (71 A, 71 B or 71 C) connecting the channels through the multiplexer 30 to a digital signal processor 80; an oscillator (41 or 45) connected to and providing a common sampling rate to the A/D and D/A converters (column 6, lines 2-4); and the

digital signal processor 80 controlling the multiplexer 30 (see column 5, lines 53-56) and modifying received digital signals to accommodate for the different carrier frequencies using the common sampling rate (see Fig. 4). Culpepper discloses all the subject matters claimed in claim 1, except that the second channel is used for transmitting and receiving signals. Siegel, in the same field of endeavor, discloses a method/apparatus for locating a transmission signal from a radio transmission emitter device, such as a cell phone, in a rescue area (see the abstract). Siegel further discloses (see paragraph 0029) that base station's antennas are capable of transmitting and receiving signals (see paragraph 0031), wherein the signals transmitted from the base station 40 originate (i.e. the control system controls the transmitted signals) from the control system 50. It would have been obvious to one of ordinary skill in the art at the time of invention to enable the channels used by Culpepper's apparatus to transmit and receive signals in order to facilitate the communication between mobile units and base stations.

As to claim 3, Culpepper discloses a third channel (see Fig. 4, 29c) for receiving signals at a third carrier frequency and connected to the multiplexer 30. Culpepper discloses all the subject matters claimed in claim 3, except that the third channel is used for transmitting and receiving signals. Siegel, in the same field of endeavor, discloses a method/apparatus for locating a transmission signal from a radio transmission emitter device, such as a cell phone, in a rescue area (see the abstract). Siegel further discloses (see paragraph 0029) that base station's antennas are capable of transmitting and receiving signals (see paragraph 0031), wherein the signals transmitted from the base station 40 originate (i.e. the control system controls the transmitted signals) from

the control system 50. It would have been obvious to one of ordinary skill in the art at the time of invention to enable the channels used by Culpepper's apparatus to transmit and receive signals in order to facilitate the communication between mobile units and base stations.

As to claim 5, Culpepper discloses that the processor 80 performs communication protocols for at least two of the channels simultaneously (see column 5, paragraph 4).

As to claim 6, Culpepper discloses that the processor 80 performs communication protocols for the first and second channels simultaneously (See column 5, paragraph 4).

As to claim 7, Siegel discloses that the geographical position information can be determined employing GPS techniques (see paragraph 0020) (interpreted as receiving GPS signals by the first channel). Siegel further discloses that the combination base station/master control unit 170 illuminates the rescue area with strong pilot signals which uses any of the common wireless standards e.g. GSM, so that cell phones within the rescue area will connect to the base station transferring signal lock and control away from local commercial services (see paragraph 0043) (interpreted as receiving GSM signals by the second channel). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Culpepper to use one channel for receiving GPS signals and a second channel for receiving GSM signals to enable the system to transfer signals from the mobile unit to the base station in order to facilitate the

communication between the mobile unit and the base station and to determine the location of the mobile unit.

As to claim 8, Siegel further discloses that the communication apparatus is a software-defined radio (see paragraph 0021). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Culpepper to use a software defined radio in order to allow implementation of multiple standards simultaneously on a single hardware device and therefore reduce the cost of the remote unit.

5. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Culpepper and Siegel, further in view of Sexton et al. (hereafter, referred as Sexton) (US 2003/0081569).

As to claim 2, Culpepper and Siegel disclose all the subject matters claimed in claim 2, except that a frequency synthesizer is connected to the oscillator and providing different frequency signals to the first and second channels. Sexton discloses a wireless communication system, which includes at least one mobile station 100. Sexton further discloses that the mobile station 100 contains a wireless section that includes a digital signal processor 180, as well as a wireless transceiver that includes a transmitter 200 and a receiver 220 (see paragraph 0031). Sexton also discloses that since in GSM systems transmit and receive channels are on different frequencies, at least one local oscillator 260, such as a frequency synthesizer is provided for tuning the transceiver to different GSM channels (interpreted as first and second channels). It would have been obvious to one of ordinary skill in the art at the time of invention to use a frequency

synthesizer connected to an oscillator to provide different frequencies to communication channels as required by the communication protocols.

As to claim 4, Culpepper and Siegel disclose all the subject matters claimed in claim 4, except that a frequency synthesizer is connected to the oscillator and providing different frequency signals to the first, second, and third channels. Sexton discloses a wireless communication system, which includes at least one mobile station 100. Sexton further discloses that the mobile station 100 contains a wireless section that includes a digital signal processor 180, as well as a wireless transceiver that includes a transmitter 200 and a receiver 220 (see paragraph 0031). Sexton also discloses that since in GSM systems transmit and receive channels are on different frequencies, at least one local oscillator 260, such as a frequency synthesizer is provided for tuning the transceiver to different GSM channels (interpreted as first, second and third channels). It would have been obvious to one of ordinary skill in the art at the time of invention to use a frequency synthesizer connected to an oscillator to provide different frequencies to communication channels as required by the communication protocols.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Culpepper and Siegel, further in view of Kokkosoulis et al. (hereafter, referred as Kokkosoulis) (US 6,016,550).

As to claim 9, Culpepper and Siegel disclose all the subject matters claimed in claim1, except that the processor accommodates for the different frequency signals by linear interpolation of the sampling rate. Kokkosoulis discloses a data processor apparatus (see column 1, lines 51-53), wherein frequency multiplication is achieved by

a technique known as "linear interpolation". Kokkosoulis discloses that a linear interpolation inserts M-1 samples between every x(n) and x(n+1) samples, where M is an integer multiplication factor needed to reach a target sample rate (see column 3, last paragraph). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Culpepper and Siegel to use a linear interpolator to make the sampling rates equal for all the different frequencies, with a higher processing speed.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (2003/0050055) (2006/0015674) (7,035,201) (2002/0119754).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leila Malek whose telephone number is 571-272-8731. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leila Malek
Examiner
Art Unit 2611

L.M

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER